Name: _____( )  Class: 6_____

# Knowing my own house

This task allows you to show your understanding and application of the knowledge and skills you have learned about measurement, scale diagram, perimeter, area and volume within a real-life context.

You are required to measure the dimensions of your own house, produce a floor plan (scale diagram), and calculate the perimeter, area and volume of each room.

**INSTRUCTIONS:**

1. Use a pencil for drawings, labels and calculations.
2. Use a ruler to make sure your drawings are neat and tidy.
3. Use a single-lined or a white A4 paper to finish your draft floor plan (stage 1).
4. Use single-lined A4 paper to finish the calculations of the **drawn dimensions** (drawn dimensions means the length in cm you need to draw on the A3 graph paper) of all rooms according to your chosen scale (stage 2).
5. Draw the scaled diagram of your floor plan (stage 2) on an A3 graph paper (31cm by 38cm).
6. Use single-lined A4 paper to finish the calculations of perimeters and areas for all your rooms (stage 3).
7. Use single-lined A4 paper to finish the calculations of volume for all for all your rooms (stage 4).
8. Show clear sketches, formula and workings for stage 2, 3, and 4 when calculating perimeter, area and volume of each room.

| **Stage 1** **Draft of your own house** | **Time allowed: 1 weekend** |
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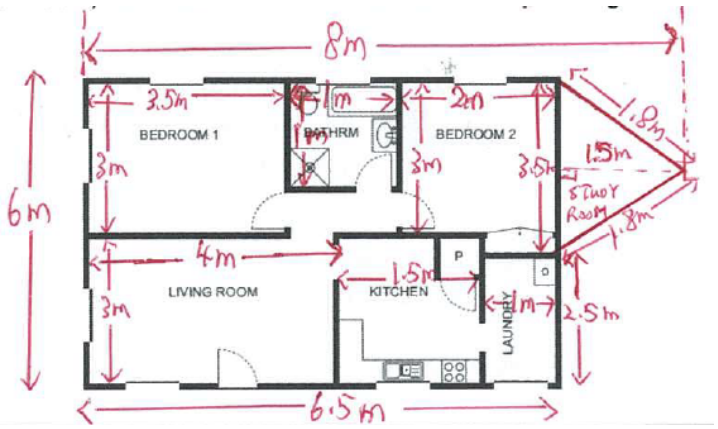
*(Note: Preparation - Homework)*

- Measure your own house/flat/unit
- Draft a floor plan of your own house/flat/unit (no need to be in scale at this time)
  (Reminder: Your unit of measurements should be in centimeters or meters)

Please complete the items listed below before you move on to the next stage.

- ☐ An overall outline structure of your house/flat/unit with the longest length and longest width
- ☐ All rooms clearly drawn with the partitions (wall / window/ door…)
  (Reminder: No furniture should be in any room)
- ☐ All rooms are clearly labeled (e.g. kitchen, bathroom/toilet, dinning room/living room, bedroom 1, bedroom 2, study room etc.)
- ☐ All dimensions that will be used for finding perimeter and area of rooms are written with suitable unit
  (Example: if it is a triangular room, each side of the room and the base and height of the room need to be indicated)



| **Stage 2** | **Scale Diagram (A3 floor plan)** | **Time allowed: 2 periods** |
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You will be given an A3 graph paper of 31cm by 38cm to draw a scale diagram of your own house/flat/unit.

1. Decide on a suitable scale
2. Calculate the drawn dimensions of each room for the A3 floor plan
3. Draw the scale diagram on your A3 graph paper using the drawn dimensions you've just calculated
   (Reminder: You need to show your workings clearly)

Example:

1. Decide on a suitable scale:

The actual longest length and width of my own house is 8m by 6m
I am going to use 32cm to represent 8m (32cm is close to but smaller than 38cm)
Scale = drawn length : actual length
Scale = 32cm : 8m
= 32cm : 800cm
= 1cm : 25cm
= 1:25
I am going to test if 1:25 is also a good scale for the width
Drawn width = actual width ÷ scale factor
Drawn width = 6m ÷ 25 = 600cm ÷ 25 = 24cm (24cm is close to but not exceed 31cm)
The scale 1:25 suits both length and width, therefore I decide to use the scale 1:25 for my A3 floor plan.

2. Calculate the drawn dimensions:

Drawn length = actual length ÷ scale factor
Actual dimension of my bedroom is 2m by 2.5 m
The scale is 1 : 25, the scale factor is 25
Drawn dimension of my bedroom:
= 2m ÷ 25 by 2.5m ÷ 25
= 200cm ÷ 25 by 250cm ÷ 25
= 8cm by 10cm
Repeat the above calculations for all of your rooms.

3. Draw 8cm as width and 10cm as length on the A3 graph paper and all the other rooms accordingly.

Please complete the items listed below before you move on to the next stage.

- ☐ Complete A3 Floor Plan of my own house/flat/unit
- ☐ A scale (1 : n) is clearly shown at the top right corner of the A3 graph paper
- ☐ All rooms are labeled
- ☐ You do not need to add the dimensions

| **Stage 3** | **Calculate the perimeter and area** | **Time allowed: 1 period** |
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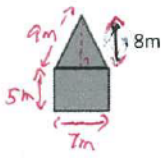
You may begin to calculate the perimeter and area of your room.
If the shape of your room(s) is irregular, you may separate the rooms into several different.

Example
Perimeter of Sitting Room
= all outside length added together
= 9m + 9m + 5m + 5m + 7m
= 35m




Example
Area of Sitting Room
= Rectangle A + Triangle B
= 5m x 7m + (7m x 8m)/2
= 63m$^2$

Please complete the items listed below before you move on to the next stage.

- ☐ Each room's perimeter and area have been calculated
- ☐ Clear workings are shown
- ☐ Sketch of each room with dimensions are shown
- ☐ Correct unit/s have been used (e.g. m for perimeter and m$^2$ for area)

| **Stage 4** | **Calculate the volume** | **Time allowed: 1/2 period** |
|---|---|---|

You may begin to calculate the volume of your room.

Example:
Volume of Sitting Room (If the height of my house is 2.2m)
= area of sitting room x the height of the house
= $63m^2$ x 2.2m
= 138.6 $m^3$

Please complete the items listed below before you move on to the next stage.

- ☐ Each room's volume has been calculated
- ☐ Clear workings are shown
- ☐ Correct unit/s have been used (e.g. m for length, $m^2$ for area and $m^3$ for volume)

| **Reflection and Self-evaluation** | **Time allowed: 1/2 period** |
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You can comment on the following points:

- ✧ about your working process
- ✧ difficulties you faced and how do you solved the problems
- ✧ which ATL skills have you developed or used to complete this task
- ✧ how accurate is your work (measurements or calculations)
- ✧ how you can improve the accuracy and quality of this task

Write your reflection on a separate A4 lined-paper.

**Comments from peers:**

Name of commenter: _____ Date:_____

**Comments from teacher**

Name of commenter: _____ Date:_____

## End of Task